Armed Forces College of Medicine

AFCM

Innate Immunity

(Part 4)

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Main Components of Immune system

I) Tissues (Organs)

1ry Lymphoid organs

- Bone marrow
- Thymus

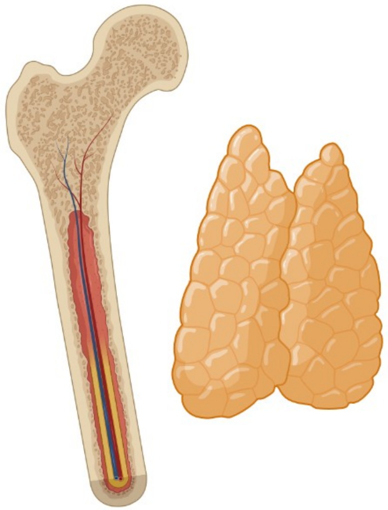
2ry Lymphoid organs

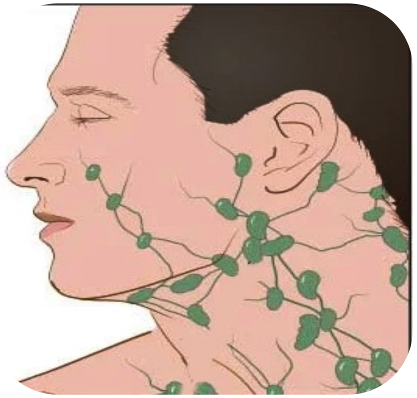
- Lymph nodes
- Spleen

II) Cells

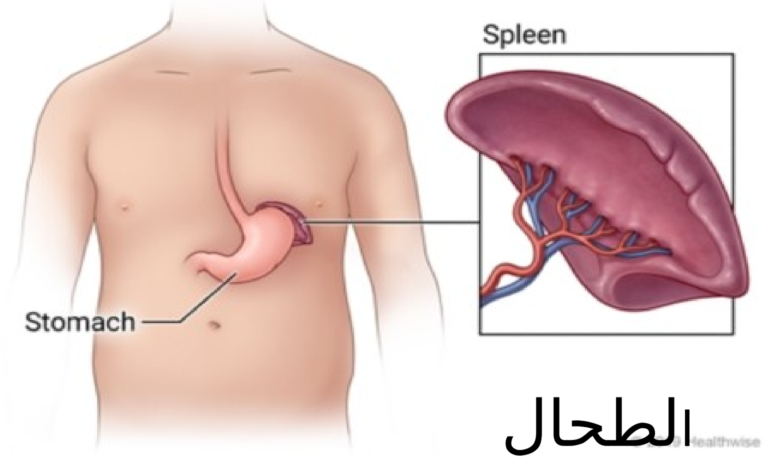
III) Circulating effector proteins (2C & 2A)

البروتينات الفاعلة الجارية في الدم





العقد



الطحال

Organs of the immune system

I) 1ry (Central) Lymphoid Organs

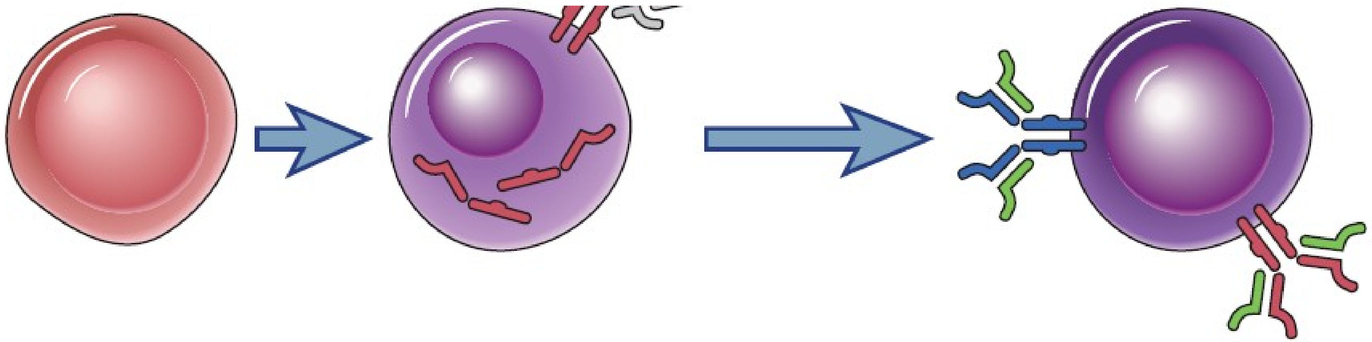
المركزية

A) Bone marrow

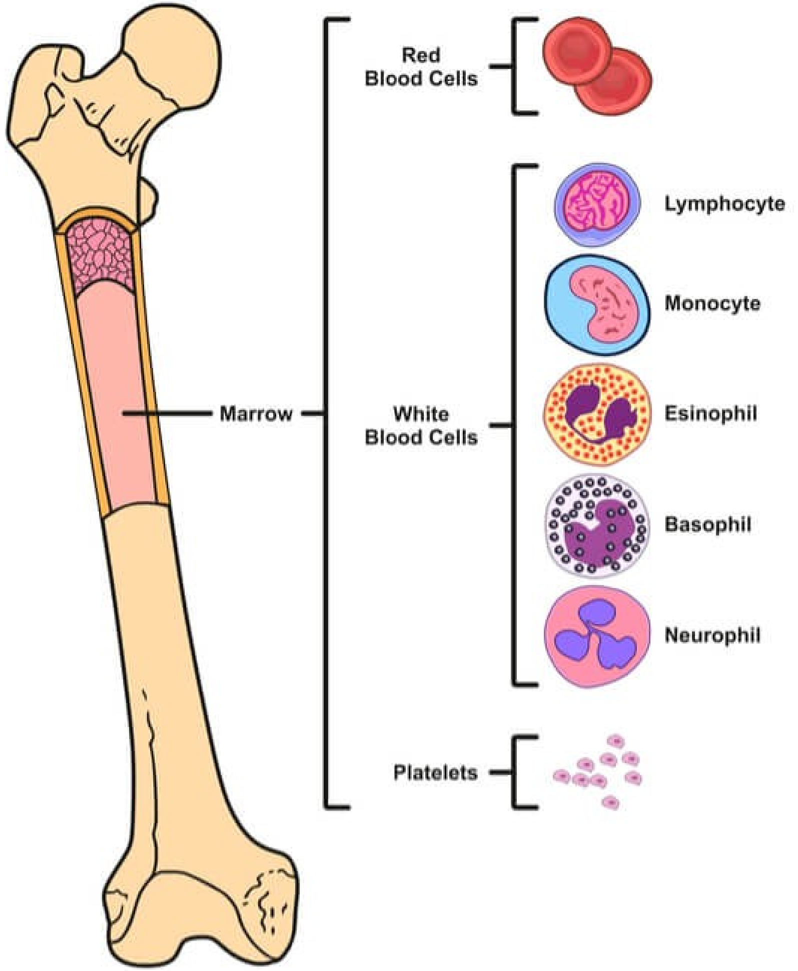
نمو

انتاج

- Generation & development of all immune cells
- Maturation of B cells (expression of Ag receptor)



ناضجة للتفاعل مع **Ag**

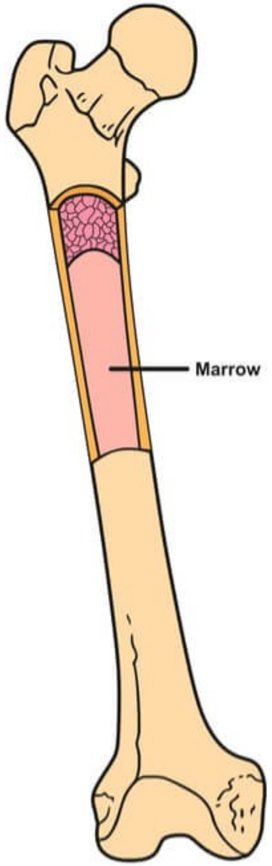


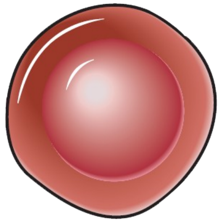
Organs of the immune system

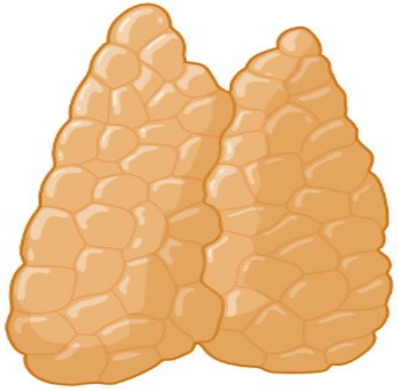
I) 1ry (Central) Lymphoid Organs

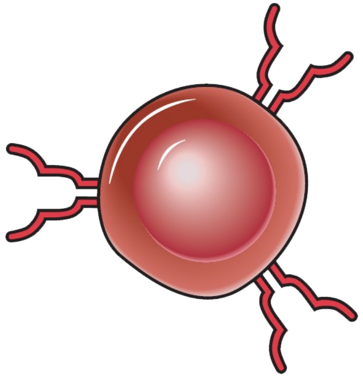
B) Thymus

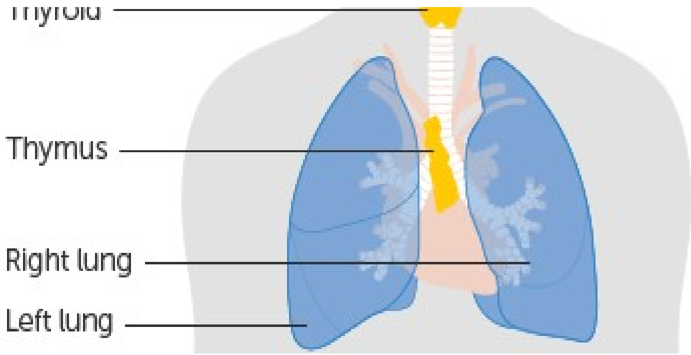
Maturation of T lymphocytes (expression of Ag receptor)





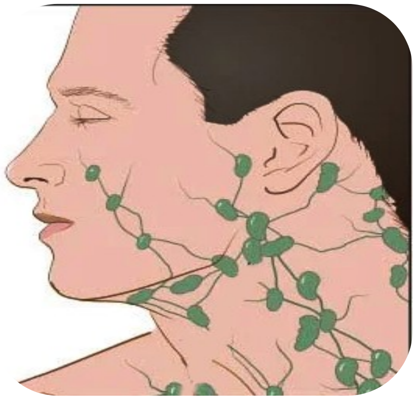


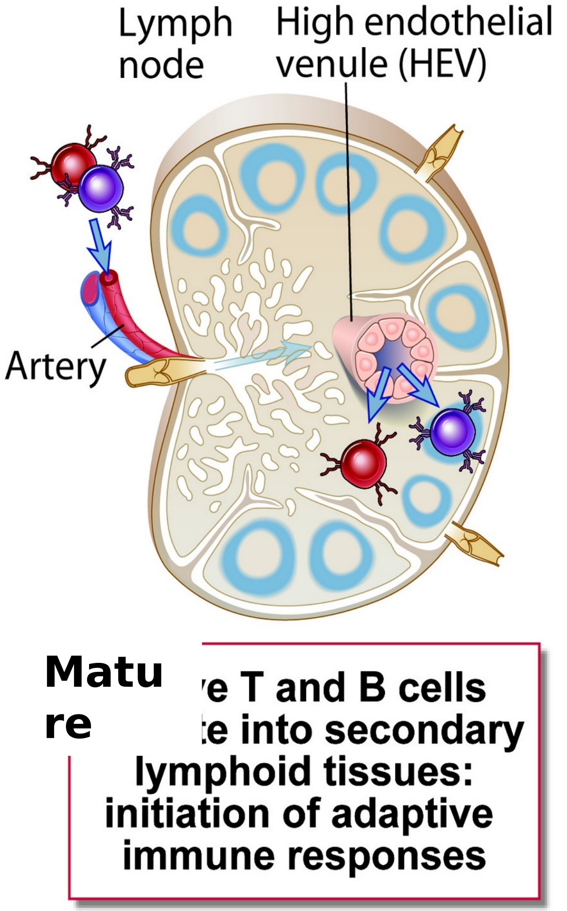


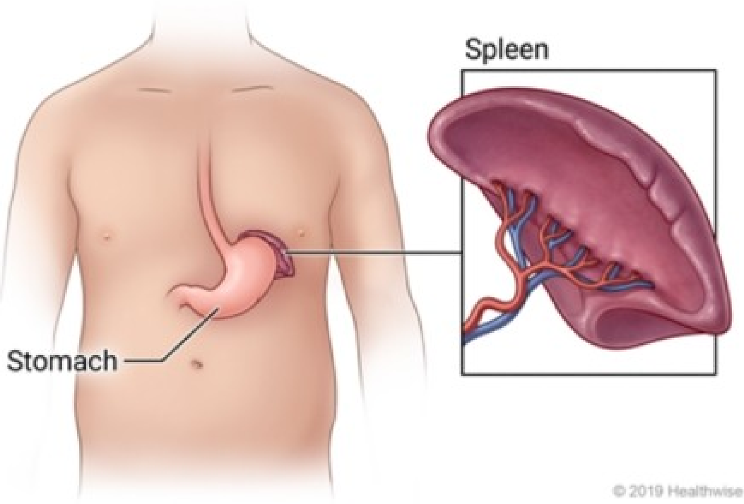


Mature B & T lymphocytes
exit 1ry lymphoid organs & enter blood
↓
Migrate to 2ry lymphoid organs

- Spleen
- Lymph nodes







II) 2ry (peripheral) lymphoid organs

الطرفية

Lymph node

1) **Concentrating microbes**

entering **tissues**

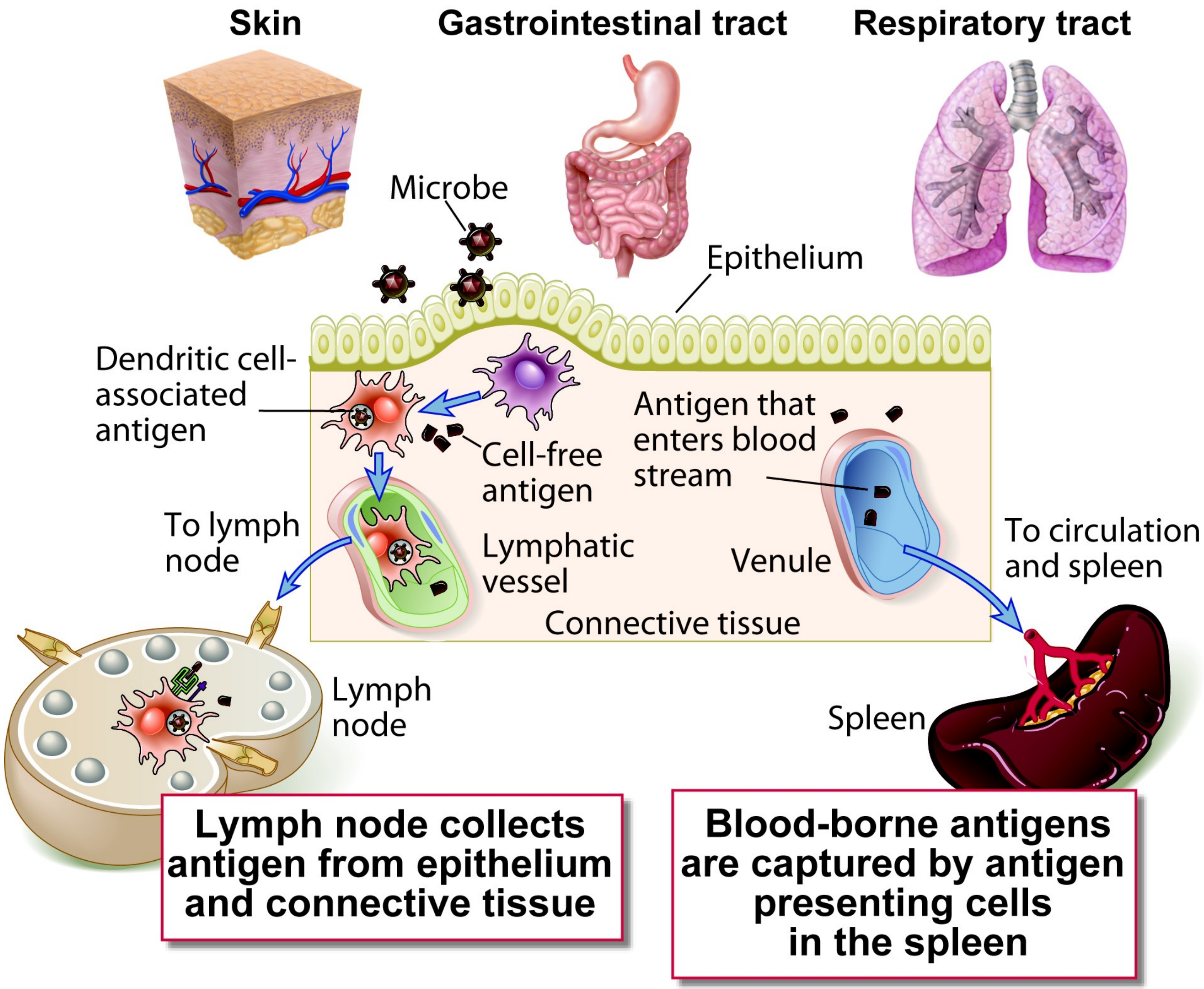
(Tissue filter) فلتر الانسجة

Spleen

1) **Concentrating microbes**

entering **blood**

(**blood filter**)



Lymph node collects antigen from epithelium and connective tissue

Blood-borne antigens are captured by antigen presenting cells in the spleen

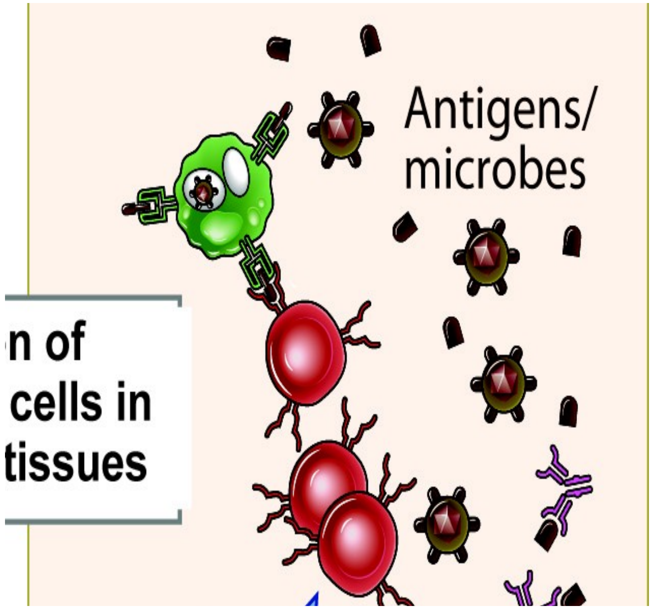
II) 2ry (peripheral) lymphoid organs

Lymph node

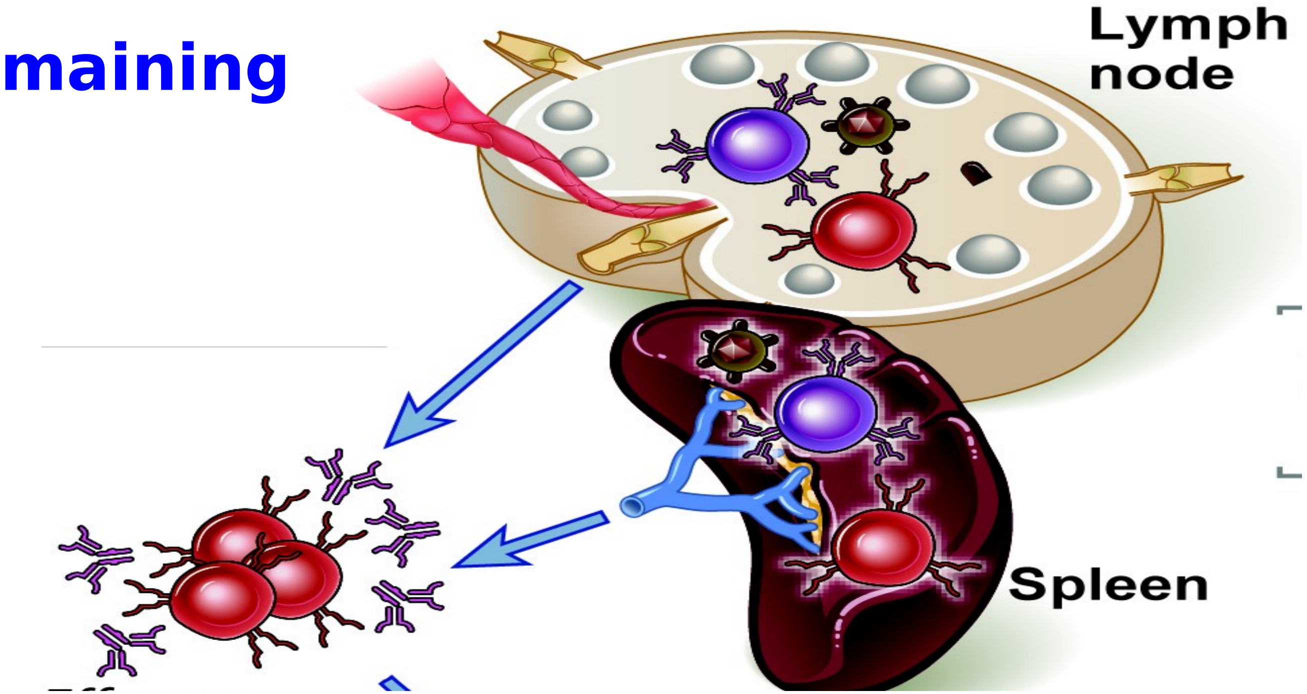
Spleen

2) Initiation of adaptive immune response

Site of⊕ of mature B & T lymphocytes



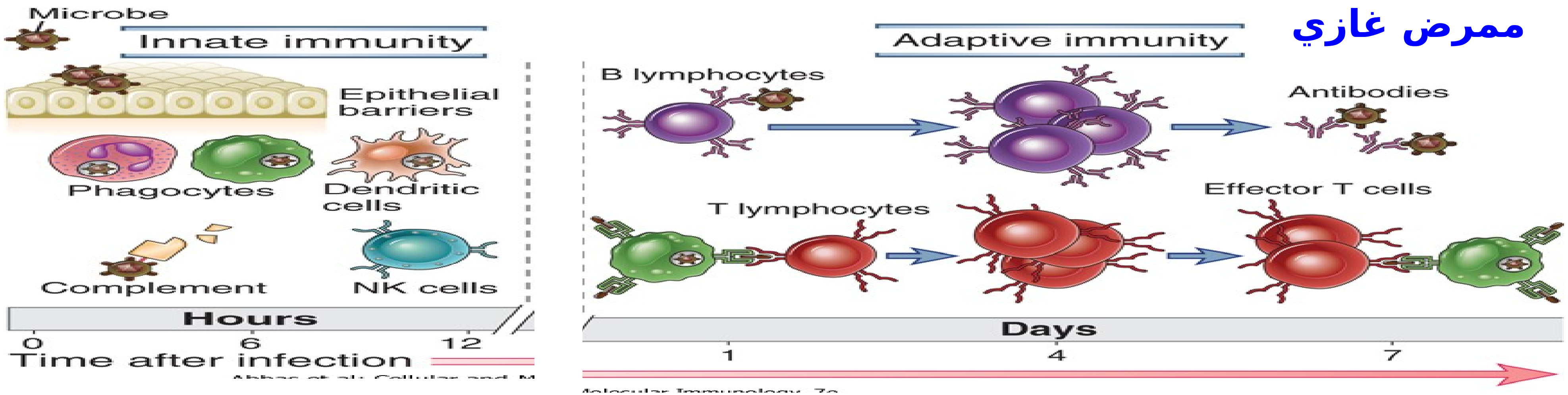
Remaining 50



Comparison between innate & adaptive immunity

➲ Characteristics

	Innate (Natural) immunity	Adaptive (Acquired) immunity
Time of action	Responds **immediately** : **1st line of defense** (**early , initial** protection) **مبكر و مبدئي**	- Takes time (few days) to be stimulated by Ags ↓ Provides protection when innate immunity fails to eradicate infection **عندما تفشل في استئصال العدوي**



Abbas et al: Cellular and M
Molecular Immunology, 7e

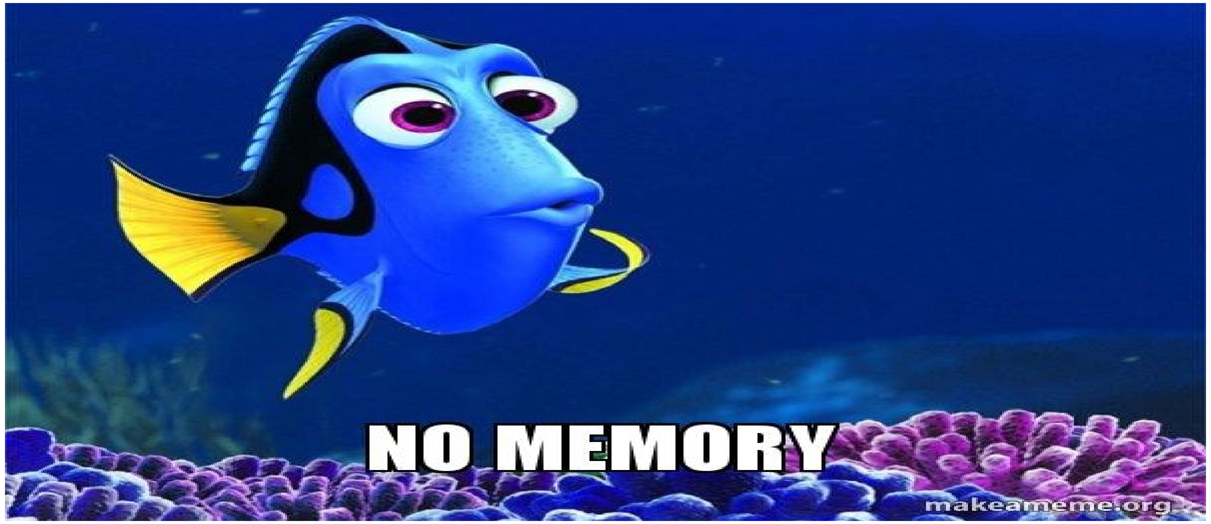
ممرض غازي

Comparison between innate & adaptive immunity

➲ Characteristics قوة	Innate (Natural) immunity
Memory on reinfection With same microbe	- Absent Responds with same intensity

القوة لا تزيدد عند
تكرار التعرض لنفس
الميكروب

ذاكرة السمكة

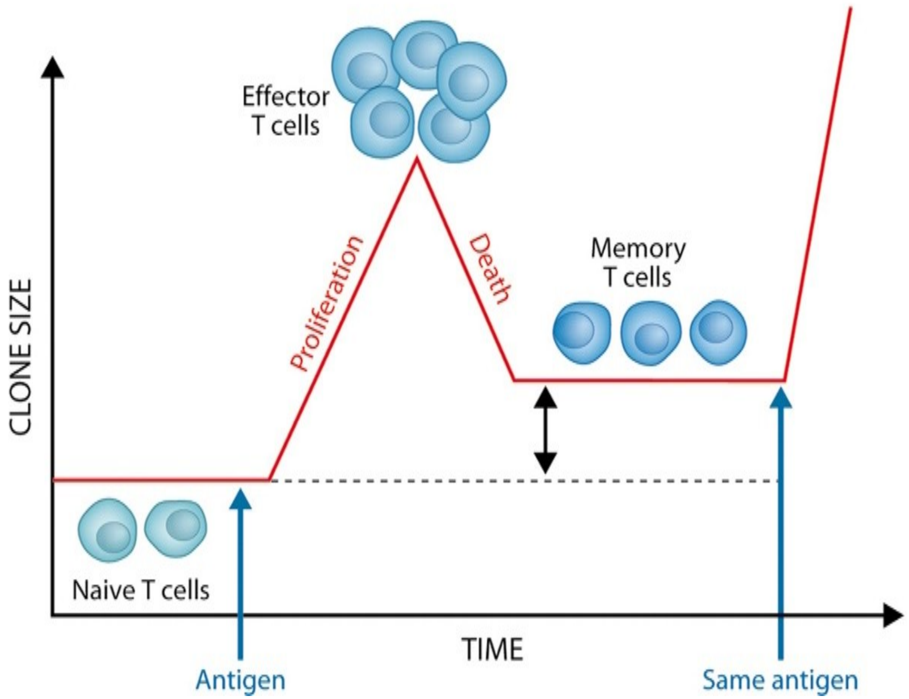


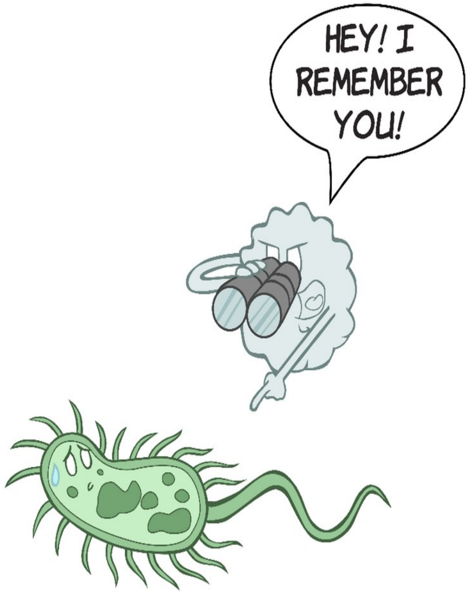
Comparison between innate & adaptive immunity

➲ Characteristics

	Adaptive (Acquired) immunity
Memory on reinfection with same microbr	- Present ➥ Stronger & faster response due to memory cells

استجابة اقوي
واسرع

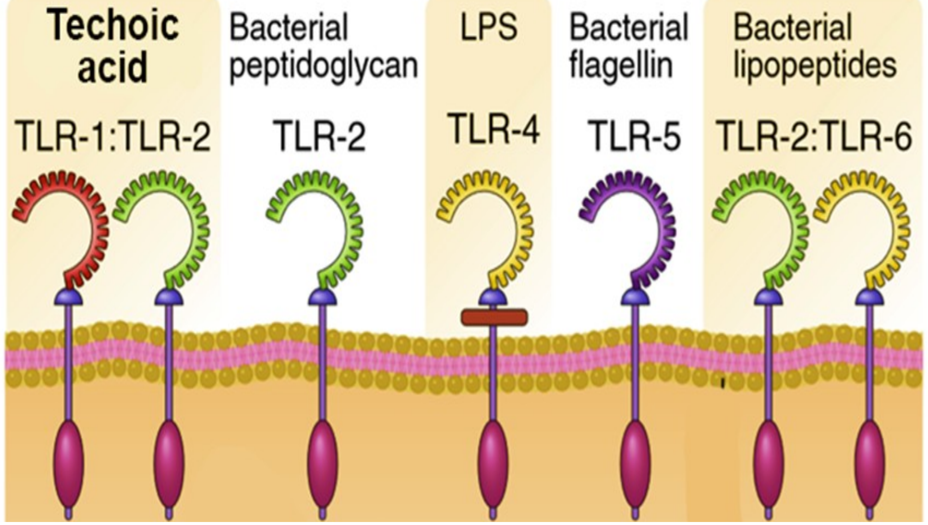


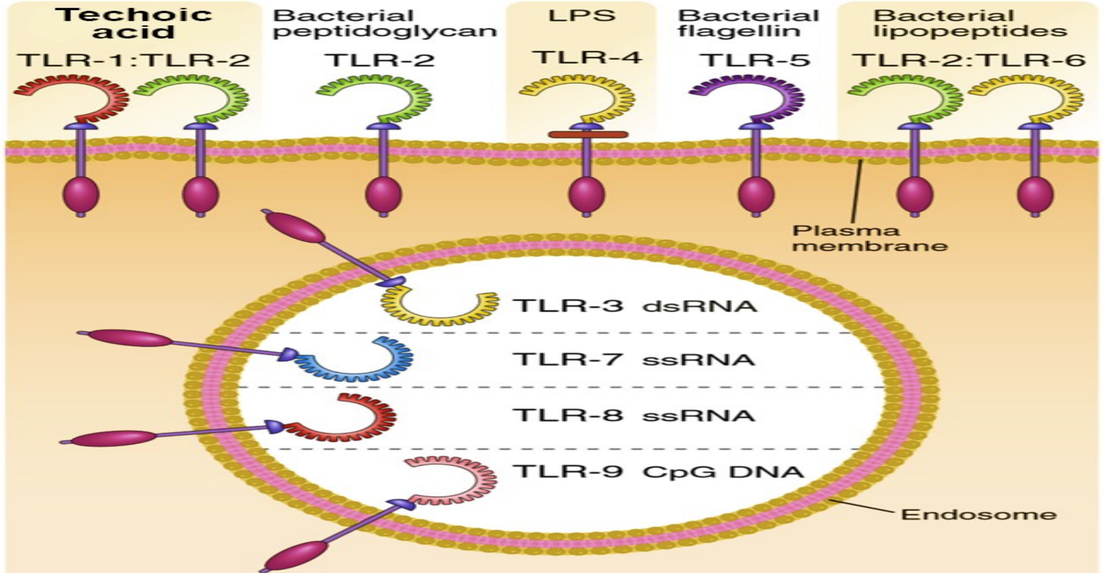

HEY! I REMEMBER YOU!

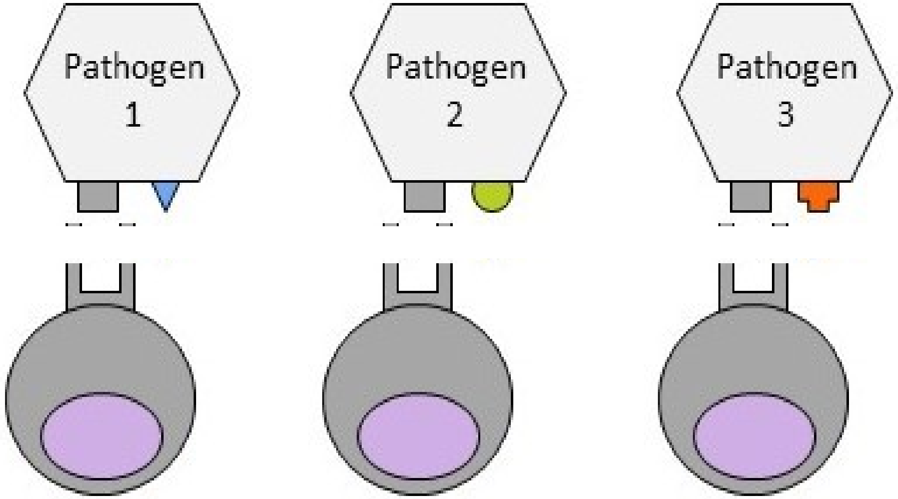
Comparison between innate & adaptive immunity

	Innate (Natural) immunity
خصوصية Specificity	**Limited** ↓ React to structures common to many microbes (PAMPs)

Toll –like receptors recognize PAMPs

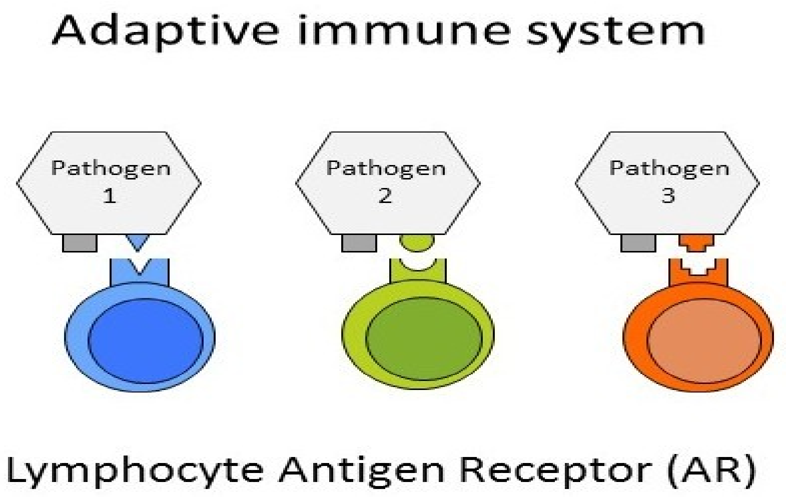






Comparison between innate & adaptive immunity

➲ **Characteristics**	**Adaptive (Acquired) immunity** High
Specificity	Each B & T cell clone has a **unique receptor** reacting only with **its specific Ag** (Epitope)



SUGGESTED TEXTBOOKS

Basic Immunology

Functions & Disorders of the Immune System

5th edition

Abul K.Abbas

Chapter 2 : Innate immunity